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ABSTRACT .

The relationship between revenue dispersion and several indicators of financial condition in four-year colleges and universities was studied. Revenue dispersion is a measure of the diversity of institutional income sources. It was hypothesized that revenue dispersion would be positively related to financial condition, since variants on open-systems theory suggested that the institution with dispersed revenues should be less vulnerable to the vicissitudes of any one income source. All four-year postsecondary institutions for which the necessary Higher Education General Information Survey data were available for 1975, 1976, 1978, or 1979 were included in the study. The institutional populations ranged from 1,889 to 1,937. The following indicators were tested against revenue dispersion in a series of lagged and non-lagged regression analysis: fluctuation in revenues; level of financial reserves; constant dollars spent on instruction; and the proportion of educational and general expenditures devoted to instruction, research, and academic support. Regression results suggest that revenue dispersion is significantly, positively related to financial indicators tested in several of the non-lagged equations. By contrast, it was generally insignificant in lagged regressions. This insignificance suggested the presence of multicollinearity among the independent variables. (Author/SW)

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The Relationship of Revenue Dispersion
to Several Indicators
of Institutional Financial Condition

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ABSTRACT

The research discussed in this paper tested the relationship between revenue dispersion and several indicators of financial condition in four-year colleges and universities. Revenue dispersion is a measure of the diversity of institutional income sources. It was hypothesized here to be positively related to financial condition, since variants on open-systems theory suggested that the institution with dispersed revenues should be less vulnerable to the vicissitudes of any one income source.

Indicators tested against revenue dispersion in a series of lagged and non-lagged regression analyses included fluctuation in revenues; level of financial reserves; constant dollars spent on instruction; and the proportion of educational and general expenditures devoted to instruction, research, and academic support.

Regression results suggested that revenue dispersion is significantly, positively related to financial indicators tested in several of the non-lagged equations. By contrast, it was generally insignificant in lagged regressions. This insignificance suggested the presence of multicollinearity among the independent variables.

INTRODUCTION

In 1971 Earl F. Cheit predicted that a New Depression In Higher Education was imminent. Institutional costs had been rising since World War II, but by the late 1960s income growth had begun to decline. This portended a "cost-income squeeze" in which costs would soon outstrip institutional income.

Cheit and others continued throughout the 1970s to document the financial plight of higher education and to predict its likely effects (see Taylor, 1982). Ultimately, the widely accepted idea that costs were rising faster than income, accompanied by the desire to understand and quantify the effects of the financial crisis, led to the search for objective indicators which could be used to monitor financial condition. Several of these indicators formed the basis of the research to be discussed here.

Indicators are "statistics or statistical series that facilitate the quantitative description of the current state or condition of something, as well as pinpoint how, and in what ways, that condition is changing" (Collier and Patrick, 1978, p. 1). Indicators are widely used in our society to monitor the state of the economy. For example, the Consumer Price Index and the Gross National Product provide quantitative measures of complex sets of economic phenomena so that changes in these phenomena can be evaluated over time. Indicators of higher education's financial condition have been developed to serve an analogous purpose.

The research discussed in this paper tested the relationship between revenue dispersion and several indicators of financial condition in

four-year colleges and universities. Revenue dispersion (Collier and Patrick, 1978) is a measure of the diversity of institutional income sources. It was hypothesized here to be positively related to financial condition, since variants of open systems theory, discussed below, suggested that the institution with dispersed revenues should be less vulnerable to the vicissitudes of any one income source.

This paper begins with a discussion of the theoretical foundation of the research. It then reports on the methodology employed, data analysis undertaken, and conclusions reached.

CONCEPTUAL FRAMEWORK AND METHODOLOGY

A Conceptual Framework

The open systems perspective on organizations (Katz and Kahn, 1978) holds that the organization exists within, and is affected by, an environment. To survive, the organization must attract resources from its environment and must find consumers for its products. The organization whose resource requirements exceed the income from its products will fail. It is for this reason that Pfeffer and Salancik argue that, "The key to organizational survival is the ability to acquire and maintain resources" (1978, p. 2). The organization is not threatened merely because it is dependent on its environment, they suggest, but because "the environment is not dependable" (p. 3). The environment is constantly changing and resources, in kind or quantity, change accordingly. Thus, the organization which survives is the one which is able to acquire sufficient resources from an unstable environment.

While all organizations are open systems, not all are buffeted by their environments to the same degree. Pfeffer and Salancik state that

The loosening of external control can be accomplished . . . through the loosening of dependencies. Organizations are controlled by an external source to the extent that they depend on that source for a large proportion of input or output. Dependence diminishes through diversification (p. 271).

Thus, the organization whose financial inputs are obtained from diverse sources would be expected, following Pfeffer and Salancik's logic, to be less vulnerable to the vicissitudes of any one of these sources. Such "loosening of dependencies" should assist the organization in maintaining its activities, even in the face of fluctuation in some of its resources.

The population ecology model (Aldrich, 1979; Hannan and Freeman, 1977) shares with the resource dependence perspective an explicit recognition of the environment's effect on organizational condition and survival. However, the two views diverge in several important respects, one of which is pertinent here. Population ecologists differentiate between specialist and generalist organizations, the former engaging in a relatively broader range of activities than the latter. The theory posits that, in a stable environment, specialist organizations fare better than generalists. The specialist can fit itself ideally to given environmental conditions and operate at a high level of efficiency. Generalists carry organizational slack which specialists do not need. Such slack decreases efficiency.

In a turbulent environment the relative advantages of generalist and specialist organizations are reversed. The specialist is more likely to fail in this circumstance because the changed environment may

no longer select the organization's product. Conversely, the generalist's organizational slack enables it to adapt more readily to a shifting environment. The generalist's range of products increases the probability that it will succeed in satisfying environmental demands at a time when these demands are unstable.

Revenue dispersion in colleges and universities correlates strongly with institutional complexity. The large research university, which we might term a generalist organization, is much more likely to have highly dispersed revenues than is the small, private, liberal arts college. Parenthetically, this is not a surprising finding. Revenue providers are often "buying" particular institutional products. The greater the diversity of products, therefore, the greater will be the corresponding diversity of revenues. The importance of this observation for the purposes of this paper is that it allows comparison of the resource dependence and population ecology models with respect to their implications for the relationship of revenue dispersion to financial condition.

We have already explained that the resource dependence perspective suggests that colleges and universities with dispersed revenues should exhibit evidence of relatively stronger financial condition. The population ecology model would add a caveat. That is, the benefits of revenue dispersion might not be apparent in a time of environmental stability. In fact, the results of this research will suggest that neither model is capable of explaining fully the observed relationship between revenue dispersion and financial condition, but that each may contribute to a partial understanding of this relationship.

Methodology

The hypothesis that revenue dispersion would be associated with indicators of relatively stronger financial condition was tested in a series of lagged and non-lagged multiple regression analyses. All variables were constructed using data from the National Center for Educational Statistics Higher Education General Information Survey (HEGIS).

The revenue dispersion measure was calculated as described in Appendix A and served as the main independent variable in all regression equations.

The four indicators of financial condition used in the research served as dependent variables. Three of these indicators were suggested by Dickmeyer (1979, 1981). Because they emerge from a conception of the institution as functioning in an economic environment, they were judged to be particularly consonant with an open systems perspective on colleges and universities.

The first of these indicators, level of financial reserves, is a measure of financial flexibility. It is predicated on the assumption that institutions with financial reserves can meet changing environmental demands with greater success than those institutions lacking reserves. The indicator is expressed as follows:

$$\frac{\text{current fund balance} + 20\% \text{ endowment fund balance}}{\text{current fund expense}}$$

A fund balance is equal to assets minus liabilities in that fund group. By dividing a fund balance by current fund expenses one can estimate reserves in relation to yearly expenditures. The endowment fund balance in this case is given a lower weight than the current fund balance to acknowledge restrictions on the use of most endowment fund assets. Because many public institutions are not permitted to carry fund

balances (Dickmeyer, 1979) this indicator was applied only to private institutions.

The second indicator, "academic emphasis," is a measure of the degree to which the institution is pressured by environmental forces which favor one group of institutions over another. If, for example, the institution's enrollment is declining, it may be forced to commit an increasing proportion of its education and general budget to student aid, admissions personnel, and fund raising. This will result in a decline in the percentage of total educational and general expenditures for instruction, research and academic support, which together indicate the academic emphasis of the institution. This indicator is expressed as follows:

$$\frac{\text{instructional expenditures} + \text{research expenses} + \text{academic support expenses}}{\text{total educational and general expenses}}$$

A third indicator, "academic opportunity," demonstrates absolute decline in the institution's academic emphasis, as opposed to the relative decline reflected in the above measure. One of the measures Dickmeyer proposes for this indicator, and the one employed in this research, is total constant dollars spent on instruction.

A final indicator of financial condition tested was selected specifically to explore the proposition that revenue dispersion would be associated with greater revenue stability over time. Fluctuations in total revenues were described by calculating the percent of revenue change in constant (1975) dollars between 1975 and 1976, 1978, and 1979; between 1976, and 1978 and 1979; and between 1978 and 1979. Specifically, the HEGIS measure of total current funds revenue as adjusted by the Higher Education Price Index (Halstead, 1978; 1980) was employed.

Three factors which it was believed could mediate the effects of limited revenue dispersion were controlled statistically in this research. These factors are described below.

Wealth, expressed as total expenditures per student enrolled, in 1975 dollars, is a measure of institutional munificence. It was thought that in the wealthier institution there may be a weaker association between revenue dispersion and the dependent variables under study because that institution's sources of funds are relatively more generous or dependable.

Enrollment, a measure of institutional size, was also used as a control variable. Revenue dispersion tends to increase with enrollment, especially when institutional control is held constant. Therefore, to assess revenue dispersion's effects as distinct from those of enrollment, it was necessary to control for the latter variable.

Institutional control (public or private) was held constant in this research. It was believed that a stronger association between revenue dispersion and the dependent variables might be expected at the heavily tuition-dependent private college than at the public institution whose state support may not be so immediately tied to enrollment levels.

Research Design

All four-year postsecondary institutions for which the requisite HEGIS data were available for the years 1975, 1976, 1978, or 1979 were included in the study. For 1975 the institutional population was 1889; for 1976, 1902; for 1978, 1937; and for 1979, 1937.

A revenue dispersion index was calculated for each institution for each of the years of interest in the study, using the formula described in Appendix A.

Values of the following dependent variables for each of the years of interest were also calculated:

Financial reserves
Academic emphasis
Academic opportunity

Revenue fluctuation, expressed as percent change in total current fund revenues (in 1975 dollars), was calculated for each of the following periods:

1975-1976
1978-1979
1976-1978
1975-1978
1976-1979
1975-1979

Data for the following control variables were collected:

1. Total funds expended per student enrolled (in 1975 dollars) for each of the years of interest (a wealth measure)
2. Student enrollment in 1975 (an institutional size measure)
3. Institutional control (public or private)

Two forms of the multiple linear regression model -- lagged and non-lagged -- were employed to determine if, in fact, revenue dispersion was associated with the hypothesized indicators of financial condition.

The non-lagged model associates values of a dependent variable as measured at a given time with values of the independent variable(s) as measured at the same time. This model was used to test the association between revenue dispersion and the indicators of financial reserves, academic emphasis, and academic opportunity. The control variables were first entered into the equation as a block and were allowed to explain as much of the variation in the dependent variables as they were able.

At that point the residual variation in the dependent variable was regressed on the revenue dispersion index.

In the lagged regression model, values of a dependent variable are associated with values of the independent variable(s) at an earlier time. The earlier value of the dependent variable is used as a statistical control. Thus, the model tests whether changes over time in the independent variable(s) are associated with changes in the dependent variable.

The lagged regression model was used in two sets of equations. First, it was used to test the relationship between changes over time in the revenue dispersion index and in financial reserves, academic emphasis, and academic opportunity. As in the non-lagged equations, the control variables were entered first into the equation. The residual variation in the dependent variable was then regressed on the value of that dependent variable in the earlier year. Finally, the remaining variation in the dependent variable was regressed on the dispersion index value for the earlier year.

The second set of equations using the lagged model tested the relationship between revenue dispersion and fluctuation in revenues. In each set of equations, lags were tested in all of the combinations of years which the data allowed. Lags of one, two, three and four years were studied, as summarized below:

<u>Length of Lag</u>	<u>Years</u>
one year	1975-1976; 1978-1979
two years	1976-1978
three years	1975-1978; 1976-1979
four years	1975-1979

The form of the hypothesis demanded the creation of a dichotomous revenue fluctuation variable. It had been hypothesized that institutions whose revenues were relatively more dispersed would be less likely to experience fluctuations in total revenues. Testing this hypothesis, therefore, required dividing the institutional population into two groups: those whose revenues had fluctuated and those whose revenues had not fluctuated.

A decision rule was required for assigning institutions to one of the two values of dichotomy. It was decided to use the mean change value for each of the periods studied as the determinant of that assignment. That is, if the mean percentage change for all institutions over a given period of time was seven percent, the institution whose revenues changed at the level of eight percent over that period would be placed in the revenue change category. Conversely, the institution whose revenues changed by six percent would be included in the stable revenue category.

Once the dichotomous dependent variable was created, the equations used to test the revenue fluctuation hypothesis were created in the same way as the lagged models described on page 9. The control variables for the earlier year were entered in a block. The residual variation in the dependent variable was then regressed on the current funds revenue figure for the earlier year (in 1975 dollars). Finally, the remaining variation in the dependent variable was regressed on the dispersion index for the earlier year.

ANALYSIS OF DATA

Descriptive Statistics

Table 1 displays the original means and standard deviations of all variables included in this research. The values of financial reserves, academic opportunity, and revenue fluctuation were highly, positively skewed in their original form. Therefore, actual regression analyses were performed on logarithms of these variables' original values.

Indicators of financial reserves, academic emphasis, academic opportunity, and revenue dispersion remained very stable over the period studied. In fact, institutional revenue and expenditure changes tend to be marginal in the short run so this stability is not surprising.

Revenue fluctuation indicators reflect the effects of inflation on real institutional revenues. Recall that revenue fluctuation is a measure of the percentage of revenue change in 1975 dollars over the period indicated. Hence, while real revenue gains averaging 22 percent were made over the period of 1975 to 1978, a decline between 1978 and 1979 of 2.5 percent contributed to a gain just short of 19 percent over the entire period studied.

Values of the revenue dispersion variable range from a low of 1.101 in 1978 to a high of 1.108 in 1975. Possible values of the variable range from zero to two. In order to be assigned a dispersion value of zero, the institution would have to receive all of its revenues from just one of the six possible revenue sources which comprise the index. The institution with a dispersion index of two would be one reporting that it received one-sixth of its revenues from each of the possible

listed revenue sources. In fact, for all of the years studied, the minimum dispersion value assigned was zero. Maximum values ranged between 1.693 in 1975 to 1.649 in 1978.

The independent variable wealth, which, it will be recalled, is a ratio of current fund expenditures to enrollment, shows consistent gains over the period studied. These gains may be more apparent than real. The HEGIS data file used in this research restricted the enrollment figure available to that of the 1974-75 academic year. To the degree that this figure understates enrollment in subsequent years, the resulting wealth measure is exaggerated.

Control is a dichotomous variable. The value of one for the variable indicates a public institution. Two indicates a private institution. The mean value of 1.719 indicates that private institutions preponderate in the population. In fact, of the total population of 2,020 institutions included in the study 1,452 (72 percent) are private, and 568 (28 percent) are public.

Regression Analyses

The results of regression analyses of these data are presented in Tables 2 through 8. Tables 2 through 4 display the unstandardized regression coefficients, constants, and multiple coefficients of determination (R^2) for the non-lagged regressions of financial reserves, academic opportunity, and academic emphasis on the dispersion index. Results for 1975, 1976, 1978, and 1979 are included.

Tables 5 through 7 present the results of regression analyses for the lagged regressions of financial reserves, academic opportunity, and academic emphasis on dispersion index values. Lags of one year

(1975-1976, 1978-1979), two years (1976-1978), three years (1975-1978, 1976-1979), and four years (1975-1979) are included. As with the non-lagged regressions, the unstandardized regression coefficients, constants, and multiple coefficients of determination (R^2) are presented.

Table 8 displays the results of the six revenue fluctuation regression analyses undertaken in the study. Lags of one year (1975-1976, 1978-1979), two years (1976-1978), three years (1975-1978, 1976-1979), and four years (1975-1979) were studied.

RESULTS

Tables 2 through 4 make clear that revenue dispersion is significantly related to the indicators of financial condition tested in several of the non-lagged regression equations. By contrast, it is generally insignificant in lagged regressions. This insignificance suggests a multicollinearity problem. Multicollinearity occurs when independent variables are highly correlated and it results in biased parameter estimates. A glance at the non-lagged regression results in Table 3 offers a clue to understanding the source and the effect of this problem.

In 1975, for example, the dispersion index and all three control variables were shown to be significantly related to the academic opportunity indicator. Another way of expressing this is that, as a group, the four independent variables are correlated with the dependent variable. When that dependent variable in turn is used as an independent variable in a lagged regression with academic opportunity

1976 as the dependent variable, the correlation dominates the resulting model. The control variables entered this equation as a block and all three at that point were shown to be highly significant. Academic opportunity 1975 then entered the equation, but because it carried much of the same information which was carried by the control variables and was more highly correlated with the dependent variable academic opportunity 1976, enrollment and control then dropped out of the equation as insignificant. The dispersion index, insignificant over all six lags, never entered the equations at all.

Some credence is lent to this analysis by the fact that in the two-, three-, and four-year lags, enrollment and control maintain their significance, even after the academic opportunity variable enters the equation. Correlations among variables as measured in adjacent years would be expected to be higher than those measured over longer lags. The amount of duplicate information carried by these more highly correlated variables is sufficient to force some variables out of the equation. Where correlations are lower, duplicate information is not great enough to render those variables insignificant.

In short, the results of the lagged regressions of academic opportunity and academic emphasis on the dispersion index should be interpreted with great care. The non-lagged regressions show a significant relationship between these variables as measured cross-sectionally. That this relationship breaks down in the lagged regressions is, paradoxically, most likely an effect of those significant relationships rather than an indication that no lagged effects exist. The practical significance of these observations to the research reported on here is that statistically significant variables, despite any presence of multi-

collinearity, may be assumed to be related to the dependent variable. Their actual coefficients may, however, be unstable. Statistically insignificant variables, on the other hand, may not be unrelated to the dependent variable at all. Multicollinearity may mask their true effects.

In lagged and non-lagged models where revenue dispersion was shown to be significantly related to the indicators of financial condition studied, the proportion of variance it explained was small. Table 9 displays the explained variance values for the equations in which revenue dispersion was a significant predictor variable.

Regression results for all equations are discussed below by independent variable.

Financial Reserves

Results of both lagged and non-lagged regressions of this variable on the revenue dispersion index were stunning in their insignificance. The control variables enrollment and wealth were without exception insignificant. Revenue dispersion proved to be statistically significant in only one non-lagged and one lagged regression, but in neither case was it able to explain much variance in the dependent variable.

Academic Opportunity

This indicator, expressed as total constant dollars spent on instruction, showed a significant, positive relationship to revenue dispersion in the non-lagged regression analyses. By contrast, this relationship was consistently insignificant in the lagged equations.

Academic Emphasis

In a pattern quite similar to that of the academic opportunity indicator, academic emphasis (the proportion of educational and general expenses devoted to instruction, research, and academic support), showed

a consistent, positive relationship to revenue dispersion in the non-lagged regressions, but a largely insignificant relationship in the lagged regressions.

Revenue Fluctuation

The six revenue fluctuation regressions showed a nearly consistent, statistically significant relationship to revenue dispersion in the direction hypothesized.

DISCUSSION

The data analyses undertaken in this research neither wholly supported nor wholly refuted the hypothesis that revenue dispersion would be significantly related to indicators of relatively stronger financial condition. In several regression equations revenue dispersion was shown to be a significant predictor variable, but in no case was it able to explain even one percent of the variance in the indicators of financial condition employed in the study.

As a practical matter, then, Pfeffer and Salancik's contention that resource diversification should be associated with stronger financial condition was not borne out by this study. Other factors used as control variables here, as well as variables unmeasured in this study, are far better predictors of financial condition.

These findings suggest that if, indeed, revenue dispersion is associated with relatively stronger financial condition, its influence might better be understood from the population ecology perspective. Recall that population ecology theory suggests that the importance of resource variety may be apparent only when major changes in the organi-

zation's funding environment have occurred. The period studied here, 1975 through 1979, was one of relative stability in higher education's funding environment. Extending this study over a longer time period could elucidate further the importance -- or the insignificance -- of revenue dispersion as a predictor of financial condition.

TABLE 1

MEANS AND STANDARD DEVIATIONS
OF UNTRANSFORMED VARIABLES

Year	Mean	Standard Deviation
Financial Reserves		
1975	.229	.516
1976	.244	.659
1978	.227	.657
1979	.218	.655
Academic Emphasis		
1975	.527	.126
1976	.591	.130
1978	.512	.127
1979	.512	.128
Academic Opportunity		
1975	5152.891	10758.677
1976	5288.157	10995.696
1978	5725.606	11870.359
1979	5498.651	11432.408

(TABLE 1 continued)

Year	Mean	Standard Deviation
Revenue Fluctuation Values		
1975-1976	.070	.298
1976-1978	.139	.240
1978-1979	-.025	.173
1975-1978	.222	.473
1976-1979	.108	.278
1975-1979	.188	.488
Enrollment		
1975	3498.654	6166.322
Institutional Control		
1975	1.719	.450
Wealth		
1975	5834.000	21436.000
1976	6250.000	14980.000
1978	7698.000	19110.000
1979	8610.000	22262.000

(TABLE 1 continued)

Revenue Dispersion Index		
1975	1.108	.260
1976	1.104	.268
1978	1.101	.268
1979	1.107	.267

TABLE 2

Unstandardized Regression Coefficients, Constants, and
Coefficients of Multiple Determination for Non-lagged
Regression Analyses of Financial Reserves

	1975	1976	1978	1979
Enrollment	.966	.264	.191	.363
Wealth	.307	.868	.573	.237
Dispersion Index	.507*	.019	.032	.005
Constant	.808*	1.053*	1.259*	1.761*
R^2	.010*	.005	.008	.002

* Significantly different from zero at or above the 99 percent level of confidence.

TABLE 3

Unstandardized Regression Coefficients, Constants, and
Coefficients of Multiple Determination for Non-lagged
Regression Analyses of Academic Opportunity

	1975	1976	1978	1979
Enrollment	.138*	.141*	.142*	.142*
Wealth	.697*	.233*	.182*	.167*
Control	-1.071*	-1.041*	-.953*	-.949*
Dispersion Index	1.249*	1.333*	1.116*	1.093*
Constant	13.044*	12.849*	13.152*	13.134*
R^2	.611*	.599*	.610*	.609*

*Significantly different from zero at or above the 99 percent level of confidence.

TABLE 4

Unstandardized Regression Coefficients, Constants, and
Coefficients of Multiple Determination for Non-lagged
Reression Analyses of Academic Emphasis

	1975	1976	1978	1979
Enrollment	.476*	.528*	.591*	.563*
Wealth	.621*	.149*	.158*	.145*
Control	-.097*	-.095	-.089*	-.096*
Dispersion Index	.029*	.022	.039*	.033*
Constant	.608*	.585*	.589*	.587*
² R	.274*	.281*	.333*	.347*

* Significantly different from zero at or above the 99 percent level of confidence.

TABLE 5

Unstandardized Regression Coefficients, Constants, and
Coefficients of Multiple Determination for Lagged
Regression Analyses of Financial Reserves

	1975-1976	1978-1979	1976-1978	1975-1978	1976-1979	1975-1979
Enrollment	-.546	-.143	.322	-.149	.355	-.927
Wealth	-.862	-.102	.230	-.437	.926	-.193
Distress Potential (Earlier Year)	.745*	.566*	.699*	.538*	.362*	.289*
Dispersion Index	-.014	.015	.003	-.007	.022*	.001
Constant	.444*	1.018*	.539*	.836*	1.352*	1.502*
R^2	.656*	.521*	.676*	.471*	.297*	.243*

* Significantly different from zero at or above the 99 percent level of confidence.

TABLE 6

Unstandardized Regression Coefficients, Constants, and
Coefficients of Multiple Determination for Lagged
Regression Analyses of Academic Opportunity

	1975-1976	1978-1979	1976-1978	1975-1978	1976-1979	1975-1979
Enrollment	.178	.999	.214*	.133*	.227*	.136*
Wealth	.165*	.725*	.371*	.266*	.448*	.278*
Control	-.039	-.006	-.114*	-.097*	-.115*	-.097*
Academic Opportunity (Earlier Year)	.999*	.992*	.851*	.902*	.841*	.898*
Dispersion Index	-.052	.028	.109	.049	.096	.026
Constant	.090	.031	2.092*	1.478*	2.193*	1.514*
R^2	.929*	.991*	.903*	.905*	.895*	.900*

* Significantly different from zero at or above the 99 percent level of confidence.

TABLE 7

Unstandardized Regression Coefficients, Constants, and
Coefficients of Multiple Determination for Lagged
Regression Analyses of Academic Emphasis

	1975-1976	1978-1979	1976-1978	1975-1978	1976-1979	1975-1979
Enrollment	.140*	.519	.197*	.255*	.193*	.232*
Wealth	.387*	.313*	.836*	.621*	.947*	.635*
Control	-.018*	-.020*	-.023*	-.033*	-.037*	-.043*
Academic Emphasis (Earlier Year)	.795*	.845*	.729*	.641*	.661*	.610*
Dispersion Index	.792	.004	.015*	.008	.011	.007
Constant	.015*	.086*	.156*	.194*	.197*	.217*
R^2	.707*	.816*	.734*	.622*	.670*	.602*

* Significantly different from zero at or above the 99 percent level of confidence.

TABLE 8

Unstandardized Regression Coefficients, Constants, and
Coefficients of Multiple Determination for
Regression Analyses of Revenue Fluctuation

	1975-1976	1978-1979	1976-1978	1975-1978	1976-1979	1975-1979
Enrollment	-.169 [*]	.181	-.104	-.291 [*]	-.105	-.302 [*]
Wealth	-.691 [*]	.993	.900	-.761 [*]	.164	-.774 [*]
Control	-.011	.004	-.007	-.015	.001	-.009
Current Fund Revenue (Earlier Year)	.125	.384	-.151	.151	.537	.222
Dispersion Index	-.031 [*]	-.014 [*]	-.013	-.047 [*]	-.037 [*]	-.061 [*]
Constant	.773 [*]	.671 [*]	.681 [*]	.851 [*]	.667 [*]	.845 [*]
R ²	.025 [*]	.005	.005	.021	.010 [*]	.022 [*]

* Significantly different from zero at or above the 99 percent level of confidence.

TABLE 9

Variance in the Dependent Variable Accounted for
by the Revenue Dispersion Index

<u>Non-Lagged Regressions</u>	
Variable	Portion of Variance
Financial Reserves	.008
Academic Opportunity, 1975	.038
Academic Opportunity, 1976	.041
Academic Opportunity, 1978	.030
Academic Opportunity, 1979	.028
Academic Emphasis, 1975	.003
Academic Emphasis, 1976	.002
Academic Emphasis, 1978	.007
Academic Emphasis, 1979	.004
<u>Lagged Regression</u>	
Financial Reserves (79 on 76)	.004
Academic Emphasis (78 on 76)	.001
<u>Revenue Fluctuation Regression</u>	
1976 on 1975	.006
1979 on 1978	.003
1978 on 1975	.006
1979 on 1976	.006
1979 on 1975	.009

APPENDIX A

The revenue dispersion index used in this research was suggested by Collier and Patrick (1978) and is calculated as follows:

Define r_{ij} = i^{th} revenue source for the j^{th} institution where, with current HEGIS data, there are six major revenue sources:

- (1) net tuition and revenue (tuition and fees minus scholarships and fellowships)
- (2) government appropriations
- (3) government grants and contracts
- (4) gifts
- (5) endowment income
- (6) other revenue

Then calculate total current funds revenues for institution j : $\sum_{i=1}^6 r_{ij}$

The proportion, p_{ij} , that each source represents of total current fund revenues is: $p_{ij} = \frac{r_{ij}}{\sum_{i=1}^6 r_{ij}}$

A measure of dispersion for each institution j can then be calculated:

$$-\sum_{i=1}^6 p_{ij} \log_e p_{ij}$$

using the standard information theory formula for measuring dispersion in categorical data.

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